

**PURWANCHAL UNIVERSITY**  
**VI SEMESTER FINAL EXAMINATION- 2003**  
**LEVEL** : B. E. (Electronics & communication)  
**SUBJECT** : BEG495MS, Engineering Economics  
**Full Marks:** 80  
**TIME:** 03:00 hrs **Pass marks:** 32

Candidates are required to give their answer in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-questions is specified along its side.

**Attempt Any FIVE questions.**

- Q. [1] [a] What are the elements of cost? Define annuity, prime cost and overhead. [1+3]
- [b] Following information has been obtained form the records of manufacturing company using standard cost system. [12]

	Standard	Actual
Production (units)	3000	2500
Direct material(kg)	9000	8700
Direct material cost (Rs)	260000	220000
Direct labour hours	8500	10000
Direct labour cost (Rs.)	170000	230000
Fixed over heads (Rs.)	270000	250000
Variable overhead (Rs)	100000	100000

Calculate: (a) Total material cost variance indicating cost variance and uses variance. (b) Total wage variance showing wage rate variance and labour efficiency variance, (c) Fixed overhead indicating expenditure variance and (d) Variable overhead variance . Also indicate variance is favorable or adverse.

- Q. [2] [a] What do you mean by IRR explain the draw backs of IRR methods. [6]
- [b] Calculate ERR for the following project if  $\text{€} = 15\%$  per year. [10]

End of the year	Net cash flow(Rs)
0	-50,000
1	16,000
2	16,000
3	16,000
4	16,000
5	26,000

- Q. [3] [a] The first investment cost for a project is Rs 10, 00000. The net annual revenues from the end of the 1<sup>st</sup> year onwards are Rs. 5,00000, Rs 4,50,000 , Rs 4,00000, Rs 3,50,000 and so on i.e decreasing the amount of Rs. 15,000 each year. Find out the FWS of this cash flow at the end of five years.  $i=10\%$ . [8]
- [b] Find both types of B/C ratio using AW capital of the following project and find weather the project is feasible or not: [8]
- Initial investment = Rs. 5,00000  
Annual Revenue = Rs. 80,000  
Annual O and M cost = Rs. 15,000  
Salvage Value = Rs. 10,000  
Life = 20 yrs  
MARR = 10%
- Q. [4] [a] A company wishes to invest its fund in a project but the company gets to two different project proposal. Recommend

the best project to the company. Use repeatability assumption and PW formulation. [8]

	Project A	Project B
First Investment	Rs.4,0000	Rs. 6,00000
Annual Revenue	Rs.1,50,000	Rs. 2,00000
Salvage Value	Rs. 80,000	Rs. 50,000
Useful Life	4 yrs	Rs. 5 yrs
MARR	10%	10%

[b] Recommend which of the following mutually exclusive project, should be chosen. Use co-terminated assumption.

[8]

	Project P	Project Q
Initial investment	Rs. 3, 75,000	Rs.8, 75,000
Annual Revenue	Rs. 1,50, 000	Rs. 2,20,000
Annual cost	Rs. 28, 000	Rs. 44,000
Salvage Value	Rs. 40, 000	Rs. 70, 000
Useful life	10 yrs	25 yrs
MARR	15%	15%

Q. [5] [a] What are uncertainty and risk? Discuss briefly about decision tree. [2+3]

[b] A company located at Pokhara wants to expand its business to one of two possible markets area Birjung or Biratnagar. A preliminary analysis produces the following data.

	Birjung		Biratnagar	
	Probability	Payoff (per year)	Probability	Payoff (per year)

Low success	0.2	600000	0.15	575000
Medium success	0.65	850000	0.75	825000
High success	0.15	1200000	0.1	1250000

Q. [6] [a] What is vat and how it is calculated? Define a recaptured depreciation. [4]

[b] A TV manufacturing company sells TV to wholesaler @ RS. 15000. The wholesaler adds 20% profit and sells the TV to retailer. The retailer fixes the price of Rs. 21000 pre TV. The vat rate is 10% and above prices are excluding of Vat .

Calculate:

[6]

[i] How much vat should the company pay per TV sold?

[ii] How much vat should the whole seller and retailer Pay per TV sold?

[iii] How much vat the government gets when the retailer sells one TV to consumer?

[c] How many hours per year would the motors have to operated at full load for annual costs to be equal? [6]

	Motor A	Motor B
Purchase cost	Rs. 2,5000	Rs.3,20,000
Horse power	100	100
Efficiency of motor	74%	92%
Useful life	10yrs	10 yrs
Maintenance cost per year	Rs.10000	Rs.5000
MARR	15%	15%
Electricity cost.	Rs. 7/kwh	Rs.7 /Kwh

Q. [7] [a] Why market research is needed? What are the two approaches to perform demand analysis? Discuss briefly.

[2+3]

[b] Following table shows the annual per capita consumption in Kg. of meat when the price in Rs. are as shown. Make hypothesized regression equation and find out the consumption if the price is set at Rs. 110 per Kg.

[11]

S.N.	Price per Kg.	Consumption ( Kg )
1.	128	65
2.	106	75
3.	134	60
4.	104	70
5.	164	55
6.	118	65
7.	134	63
8.	180	50
9.	100	80
10.	154	55
11.	176	52
12.	142	53

<b>PURWANCHAL UNIVERSITY</b>	
<b>VI SEMESTER FINAL EXAMINATION- 2004</b>	
<b>LEVEL</b>	: B. E. (Electronics & communication)
<b>SUBJECT</b>	: BEG495MS, Engineering Economics.
<b>TIME:</b> 03:00 hrs	<b>Full Marks:</b> 80 <b>Pass marks:</b> 32

Candidates are required to give their answer in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-questions is specified along its side.

**Attempt any ALL questions.**

- Q. [1] [a] Explain Cost classification and costing methods. [6]  
[b] A company has provided the following information:

	Standard	Actual
Production(units)	3000	9000
Direct material(kg)	60500kg@Rs.19kg	506000kg@Rs. 21Kg.
Direct labour(hrs)	64000hrs@Rs. 150/hr	81000hrs@Rs. 110/hrs
Fixed overhead	4600000	6400000
Variable overhead	7650000	6750000

Based on the above data [i] Material cost variance. [ii] Wage variance. [iii] Overhead variance. [10]

- Q. [2] [a] Define internal rate of return. Evaluate the following project based on internal Rate of Return (IRR), if MARR = 12%. [8]

End of year	0	1	2	3	4	5	6
Net cash flow(Rs. In 000s)	-300	-100	100	100	100	200	200

[b] Explain draw back of IRR methods and how do you overcome it? Find external rate of return when extern

reinvestment rate per year is 15% and MARR is 12% per year for the following cash flow pattern. [8]

End of year	Net cash flow(Rs)
0	-3,80,000
1	-80,000
2	80,000
3	80,000
4	80,000
5	1,80,000

- Q. [3] [a] What do you mean cash flow? Explain pay back period method. Find both types of B/C ratio by AW Formulation. [8]

Investment	1,00,00	Annual benefit	80,000
Expected life	5 yrs	Annual O&M costs	40,000
Market value	-10,000	Interest Rate.	16%

[b] What do you mean by break even analysis? Use break-even analysis to select the better alternative, if your average use of telephone service is 7 min per day. [8]

Factor	Mobile set	UTL set
Investment(Rs)	10,500	12,700
Life (Years)	5	5
Annual O&M (Rs)	3000	2,400
Market value(Rs)	3000	3,500

- Q. [4] [a] Based on the following information select the preferred alternative: [8]

Factor	Alternative 1	Alternative 2
Investment(Rs)	2,00,000	3,00,000
Annual Revenue(Rs)	1,00,000	1,40,000

S.N	Price(Rs/kg)	Demand(kg)	Value(Rs)	44,000	86,000
1	345	Salvage Value	44,000	0	
2	435	MARR	54	13%	13%
3	534	Life(yrs)	53	4	5
4	354		43		

[b] Rank the following projects by IRR method: [8]

Factor	X	Y	Z
Investment(Rs.)	70,000	50,000	40,000
Annual Revenue(Rs.)	14,250	11,250	9,250
MARR	10%	10%	10%
Life (years)	10	10	10

S.N	Price(Rs/kg)	Demand(kg)
5	543	34
6	453	35
7	452	42
8	524	52

- Q. [7] Write short note on (Any FOUR): (4×4)
- [a] Demand analysis.
  - [b] Capitalized worth.
  - [c] Pay back period: merits and demerits.
  - [d] Repeatability and co-terminated assumption.
  - [e] Present worth and future worth.

- Q. [5] [a] Explain decision tree and sensitivity analysis. [6]

[b] Perform sensitivity analysis by investigating PW over a range of +- 20% changes in the estimates for [i] investment [ii] annual net cash flow. [iii] Market value and [iv] useful life. [10]

Investment =Rs. 11,50,000	Annual revenue= Rs. 5,00,000
Annual expenses = Rs 2, 00,000	Market value= 1,00,000
Useful life = 6 years	MARR = 12%

- Q. [6] [a] Explain taxation system in Nepal and how does vat help improve revenue collection in Nepal. [6]
- [b] From the following data calculate by hypothesized regression equation the demand of the price of Rs. 450/kg. [10]

**PURWANCHAL UNIVERSITY**  
**VI SEMESTER BACK-PAPER EXAMINATION- 2004**  
**LEVEL : B. E. (Electronics & communication)**  
**SUBJECT : BEG495MS, Engineering Economics**  
**TIME: 03:00 hrs**

**Full Marks: 80**  
**Pass marks: 32**

Candidates are required to give their answer in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-questions is specified along its side.

Attempt any ALL questions.

- Q. [1] [a] What is capital? Define overhead, prime cost and cash flow. [4]  
[b] Product A is produced after three different processes. The flowing information is obtained from the accounts of a period.

Items	Total Rs	Process 1(Rs)	Process II (Rs)	ProcessIII (Rs)
Direct material	6,000	4,000	1,000	1,000
Direct wages	1,000	200	600	2,00
Direct expenses	1,200	600	200	400

The total overhead is Rs 3000 which is 300% of the direct wages. Production was 200kg. No opening or closing stocks. Prepare processes cost accounts assuming no process loss. Find the production cost per kg also. [12]

- Q. [2] [a] What is IRR? What are the advantage of ERR methods? [3]  
[b] What is capital recovery cost? Define sinking font factor

- ? [2+1]  
[c] Find ERR of the following project. The external reinvestment rate is 10%. Decide the feasibility of the project if MARR is 10%. [10]

Year	Cash flow(Rs.)
0	-2,00,000
1	-9,000
2	40,000
3	60,000
4	80,000
5	1,20,000
6	1,50,000

- Q. [3] [a] Define mutually exclusive and contingent projects. [4]  
  
[b] A company wishes to invest its fund in a project but the company gets for different projects proposal. Recommend the best project to the company using PW method. The company’s MARR is 12%. [12]

Projects	Cash flow at the end of year(in Rs)				
	0	1	2	3	4
A	-60,000	-3000	45,000	50,000	55,000
B	-1,00,000	50,000	50,000	40,000	41,000
C	-80,000	50,000	-20,000	60,000	30,000
D	-1,20,000	65,000	60,000	60,000	20,000

- Q. [4] [a] What do you mean by capital gain? Define opportunity cost. [4]

[b] Find the B/C ratio of the following project by both conventional and modified method. Use PW Formulation. [12]

Initial investment	Rs 1,00,000
Annual Revenue	Rs. 40,000
Annual cost	Rs. 15,000
Salvage Value	Rs. 20,000
Useful life	10 yrs
MARR	10%

Q. [5] [a] What are the uncertainty and risk. Discuss briefly about decision rate? [3+3]

[b] Make sensitivity analysis using present worth or annual worth method over a range of  $\pm 30\%$  in

[i] Initial investment. [ii] Annual net cash flow, [iii] Salvage value and [iv] useful life. [10]

Initial investment	Rs. 1,20,000
Annual Revenue	Rs. 60,000
Annual cost	Rs. 30,000
Salvage Value	Rs. 12,000
MARR	10%
Useful life	12 yrs

Q. [6] [a] What is VAT? How it is calculated? [4]

[b] A man wishes to have Rs. 15, 00,000 after 15 years for Europe tour after his retirement. Calculate how much equal amount he has to deposit at the end of each year on a saving account, which earns 8% per year compounded annually. [5]

[c] A whole seller purchases mobile sets named NOKIA at the rate of Rs. 4000 per set from the company. The whole seller adds 20% profit and sells the mobile set to the retailer. The retailer fixes the price of Rs. 7000 per set. The VAT is 10% and the above prices are excluding of VAT. [7]

[i] How much VAT should the whole seller pay per Mobile set sold?

[ii] How much VAT the government gets when the Retailer sells one mobile set to consumer.

Q. [7] [a] Why market research is needed? What are the two approaches to perform demand analysis? Discuss briefly. [2+3]

[b] Following table shows the consumption of apple in a city when price of apple in Rs. are as shown. Make a hypothesized regression equation and find out the consumption if the price is set to be Rs. 35. per kg. [11]

S.N	Price of Apple/Kg.	Consumption (kg).
1	25	80
2	38	70
3	28	78
4	30	73
5	27	78
6	40	68
7	42	65
8	32	74

<b>PURWANCHAL UNIVERSITY</b> <b>VI SEMESTER FINAL EXAMINATION- 2006</b> <b>LEVEL : B. E. (Electronics &amp; communication)</b> <b>SUBJECT : BEG495MS, Engineering Economics.</b> <b>TIME: 03:00 hrs</b>	
	<b>Full Marks: 80</b> <b>Pass marks: 32</b>

Candidates are required to give their answer in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-questions is specified along its side.

Attempt any FIVE questions.

- Q. [1] [a] Differentiate discrete and continuous compounding? [4]  
 [b] Calculate: [i] total material cost variance.  
                   [ii] Total wage variance.  
                   [iii] Variable Overhead variance.  
                   [iv] Fixed overhead variance including the  
                   separate component of each variance:

	Standards	Actual
Production(units)	9,000	8000
Direct material(kg)	54,000	52000
Direct material cost (Rs)	16,20,000	15,08,000
Direct labour hours	1,08,000	88,000
Direct labour cost(Rs)	1,62,00,000	1,27,60,000
Fixed overheads(Rs)	1,94,40,000	1,33,98,000
Variable overheads(Rs)	1,29,60,000	89,32,000

Find variable and fixed overhead variances separately and also indicate whether they are adverse or favorable variances.

- [b] What is the IRR of the following investment? If MARR is known to be 18% is this investment justifiable? [12]  
 Project investment cost: 12, 50,000  
 Project annual net saving: 7, 31,000  
 Project salvage value at the end of year 15: 80,000

- Q. [2] [a] Define both type of B/C ratio. [6]

- [b] Maintenance cost for a new communication tower with an expected 50 years life are estimated to be Rs. 100,000 each years for the first 5 years, followed by a Rs. 10,00,000 expenditure in the 15<sup>th</sup> year and another Rs. 10,00,000 expenditure in the 30<sup>th</sup> year. If MARR = 10%. What is the equivalent uniform annual cost over the entire 50 period? [10]

- Q. [3] [a] What do you understand by time value of money? Describe with suitable examples. [6]  
 [b] Find the both types of B/C ration using PW formulation for a project having first investment cost= 200000, project life = 15 years, salvage value = 50,000, annual benefit = 85,000, annual & M costs = 25,000 and MARR = 15%. [10]

- Q. [4] [a] What do you understand by taxation system in Nepal [4].

- [b] From the three independent sets of mutually exclusive projects, recommend the best combination of projects using IRR method. Useful life for each is 5 years and MARR = 12%. Investment capital is limited to Rs. 200,000. [12]

	Project	First cost	Net annual Benefits
Mutually exclusive	A1	50,000	15,000
	A2	70,000	18,000



Mutually exclusive	B1	120,000	20,000
	B2	180,000	40,000
Mutually exclusive	C1	140,000	40,000
	C2	180,000	45,000

- Q. [5] [a] Explain methods of market research with suitable examples. What do you understand by correlation of price and consumption rate? [4]
- [b] From following four projects, recommend the best to be implemented using IRR method. Study period is 15 years each and MARR = 12% .Use PW formulation. [12]

Project	Project A	Project B	Project C	Project D
Initial investment	400,000	300,000	650,000	500,000
Net annual revenue	100,000	70,000	150,000	125,000
Salvage value	30,000	25,000	50,000	35,000

- Q. [6] Write a short note on (Any FOUR): [ 4×4 =16]
- [i] Cash flow Diagram.
  - [ii] Value Added Tax
  - [iii] Minimum Attractive Rate of Return.
  - [iv] Breakeven analysis.
  - [v] Depreciation and recaptured depreciation
  - [vi] Payback period.

<b>PURWANCHAL UNIVERSITY</b>	
<b>VI SEMESTER BACK-PAPER EXAMINATION- 2006</b>	
<b>LEVEL</b>	: B. E. (Computer/Electronics & communication)
<b>SUBJECT</b>	: BEG495MS, Engineering Economics
<b>TIME:</b> 03:00 hrs	<b>Full Marks:</b> 80 <b>Pass marks:</b> 32

Candidates are required to give their answer in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-questions is specified along its side.

**Group-‘A’**

Long answer type questions. (Attempt any two questions) [2×12=24]

Q. [1] [a] The following information has been drawn from the records of an company using standard cost card.

	Standard	Actual
Production(units)	4,000	38,00
Working days	20	21
Fixed overheads(Rs)	40,000	39,000
Variable overheads(Rs)	12,000	12,000

Find variable and fixed overhead variances separately and also indicate whether they are adverse or favorable variances.

Q. [2] The cash Flow of a typical project is given below. Find the IRR for the project. Also draw the unrecovered balance diagram at the end of each year.

Year	Cash flow	Year	Cash Flow
0	-1500000	4	500000
1	450000	5	600000

2	400000	6	500000
3	300000	7	200000

Q. [3] The following data shows a cash flow for a project. Perform sensitivity analysis by investigating its annual worth over a range of +30% to -30% in (i) initial investment, (ii) Annual net cash flow, (iii) Salvage value and (iv) Useful life.

Initial Investment	Rs. 150000
Revenue/Year	Rs. 20000
Expenses/year	Rs. 3000
Salvage value	Rs. 50000
Useful life	Rs. 500000
MARR	10%

Also draw the sensitivity diagram.

**Group-‘B’**

Short answer type questions: (Attempt any EIGHT questions) [8×7=56]

- Q. [4] What are the drawbacks of IRR? What do you do to eliminate such drawbacks of IRR? Also explain the concept
- Q. [5] What are the elements of cost? Briefly classify the cost and explain.
- Q. [6] [a] Assume infinite project life, recommend one of the following mutually exclusive projects, if MARR is 10%.

	A	B
Initial Investment	Rs. 500000	1200000
Salvage Value	Rs. 100000	180000
Annual Costs	Rs. 90000	60000
Useful life(years)	20	50

- Q. [7] Determine both type of B/C ratio using present worth. (PW) formulation

Initial Investment	:Rs. 500,000
Revenue/year	:Rs. 100,000
Expenses /year	:Rs. 55,000
Salvage value	:Rs. 75,000
Useful life	: 16 years
AMRR	: 16%

- Q. [8] What do you mean by public investment? What do you mean by benefit cost ratio method analysis? Write the different conditions of acceptance of projects. Also mention some of its significance.

- Q. [9] Consider the following two mutually exclusive alternatives related to an improvement project and recommend with one should be implemented. Use present worth method. Assume repeatability of the alternatives. AMRR 16%.

	A	B
Initial Investment	Rs.20000	Rs. 30000
Salvage value	Rs. 4000	0
Annual receipts	Rs. 10000	Rs. 14000
Annual Costs	Rs. 4400	Rs.8600
Useful life(Years)	5	10

- Q. [10] Find the equation of trend of sales on the following situation. Also forecast the expected sales in 2005 and 2006.

Year	1999	2000	2001	2002	2003	2004
Sales	50000	55000	45000	50000	58000	65000

- Q. [11] What do you mean by time value of money?

A company lends money on the following terms: "If I give you \$100 on Monday, you owe me \$120 on the following Monday".

- What nominal interest rate per year (r) is the company charging?
- What efficiency interest rate per year is the company charging?
- If the company started with \$100 and was able to keep it, as well as all the money it received. Out in loans at all times, how much money would the company have at the end of one year?

- Q. [12] Suppose that the guardian of a boy decides to make annual deposits into a savings account, with the first deposit begin on the boy's fifth birthday and the last deposit being the boy's fifteenth birthday. Then starting on the boy's eighteenth birthday, the withdrawal will be Rs. 4,000 every year till the boy's twenty- first birthday. If the effective annual interest rate is 8% during this period of time, what are the annual deposits in years five through fifteen?

- Q. [13] Write short note on: (Any TWO) [2×3.5 = 7]

- Taxation system in Nepal
- Demand analysis.
- Breakeven analysis.

<b>PURWANCHAL UNIVERSITY</b> <b>VI SEMESTER FINAL EXAMINATION- 2007</b> <b>LEVEL : B. E. (Electronics &amp; communication)</b> <b>SUBJECT : BEG495MS, Engineering Economics</b> <b>Full Marks: 80</b> <b>Pass marks: 32</b> <b>TIME: 03:00 hrs</b>	
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Candidates are required to give their answer in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-questions is specified along its side.

Answer any FIVE questions.

- Q. [1] [a] Suppose you make equal semi annual deposits of Rs. 1000000 into a fund that of 2% per year compounded monthly. Find the balance at the end of year five. [10]
- [b] Explain different types of Economic systems. [6]

- Q. [2] [a] Use Gradient formula to determine the required end of year annual deposited that will generate the cash flows as given below. Assume the interest rate is 10% compounded annually. [10]

EOY	0	1	2	3	4	5	6	7
Cash flow	0	0	0	0	1000	1200	1400	1600

- [b] What is differed annuity? Explain. [6]
- Q. [3] [a] Find the types of B/C ratio using present worth formula and Annual worth formula where [10]
- P =Rs. 2,50,000
- N = 10 years
- Interest = 8%

Annual benefits =Rs.1,00,000

Annual total cost = Rs. 44,000

Salvage value =Rs. 40,000

[b] Explain with suitable IRR method is an unreliable way of comparing investment opportunity when there are significant differences between the amounts involved? [6]

- Q. [4] [a] In the design of a special-use structure, tow mutually exclusive alternatives are under consideration. The economic estimates are as follows:

	A	B
Capital investment	-55000	-12000
Annual expenses	-9000	-5500
Useful life(years)	20	50
Market value at the end of useful life.	1000	22000

If perpetual service from the structure is assumed, which design alternative should be recommended? The MARR is 10% per year. [10]

[b] Discuss repeatability assumption and co-terminated assumption. [6]

- Q. [5] [a] Perform sensitivity analysis by investigating the annual worth of the following project over a range of 40% in annual investment.
- Annual net revenue
- Initial investment = Rs. 650000
- Annual Revenue =Rs. 110000
- Annual Expenses =Rs. 10000
- Salvage Value = Rs. 8000
- Useful life =13yrs
- MARR = 10%
- Draw also sensitivity graph. [10]

[b] Write a note on Elements of cost. [6]

- Q. [6] [a] Write a short note on (any FOUR) : [4×4=16]
- [i] Mutually Exclusive, Independent and Contingent projects.
  - [ii] Market research.
  - [iii] Job Costing and Process costing
  - [iv] VAT
  - [v] Decision Tree

<b>PURWANCHAL UNIVERSITY</b>	
<b>VI SEMESTER FINAL EXAMINATION- 2008</b>	
<b>LEVEL</b>	: B. E. (Electronics & communication)
<b>SUBJECT</b>	: BEG495MS:Engineering Economics.
<b>TIME:</b> 03:00 hrs	<b>Full Marks:</b> 80 <b>Pass marks:</b> 32

Candidates are required to give their answer in their own words as far as practicable.

All questions carry equal marks. The marks allotted for each sub-question along its side.

**Answer Five questions.**

Q. 1 [a] What are the principles of Engineering Economy? Explain [4]

[b] The information given below shows the records of a manufacturing company comparing the actual data with the data from the standard cost card:

	Standard	Actual
Production	9300	10500
Direct Material(kg)	74400	78750
Direct Material cost(Rs)	1860000	1811250
Direct Labor(Hrs)	102300	136500
Direct Labor cost (Rs)	9718500	1337700
Fixed Overhead (Rs)	21483000	28392000
Variable Overhead(Rs)	15345000	17199000

- Calculate: (i) Total material cost variance.  
(ii) Total labor cost variance  
(iii) Fixed overhead variance and  
(iv) Variable overhead variance

Indicate the separate components of each variable. Also indicate favourable and adverse. [12]

Q. 2 [a] The flows of the cash are given below:

End of Year	Cash flows (Rs)
1	-8000
2	-7000
3	-6000
4	-5000

Calculate the present equivalent I = 15% per year.

[b] In your own words, describe the life-cycle cost concept . Why is the potential for achieving life-cycle cost saving greatest in the acquisition phase of the cycle. [6]

Q. 3 [a] What do you mean by time value of money? Describe with suitable example. [4]

[b] Find the IRR from the following project. The external investment rate is 12%, Decide the feasibility of project of MARR = 12%.

Initial investment(Rs)	50,00,000
Annual revenue(Rs)	60,0000
Annual expenses(Rs)	10200
Salvage value (Rs)	50000
Useful life(yrs)	25

It is expected that there is a periodic expenses of Rs. 3 lakhs in 10<sup>th</sup> year and Rs. 7 lakhs in 18<sup>th</sup> year. [12]

Q. 4 [a] Define the both types of B/C ratio for PW method. [4]  
[2+6]

[b] Find both type of B/C ratio using AW formulation of the following project and find whether the project is feasible or not: [8]

Initial investment (Rs)	500000
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Annual Revenue(Rs)	80000
Annual O &M cost (Rs)	15000
Salvage value (Rs)	10000
Useful life(yrs)	20
MARR	10%

[c] Summarize the basic steps involved in incremental investment analysis procedure. [4]

Q. 5 [a] Suppose you are analyzing the following six mutually exclusive alternatives for a small investment project. Using IRR or ERR method choose the better alternative. The useful life of each alternative is 10 years and the MARR is 10% per year. [12]

	Alternatives					
	A	B	C	D	E	F
Capital investment(Rs)	900	1500	2500	4000	5000	7000
Annual revenue less Exp(Rs)	150	270	400	925	1125	1425

[b] What are mutually exclusive independent and contingent project. [4]

Q. 6 [a] Perform sensitivity analysis by investigating its PW over a range of +-20% changes in the estimates for: [12]

- \* Investment
- \* Annual net cash flow
- \* Market value
- \* Useful life.

Initial investment (Rs)	200000
Annual revenue(Rs)	50000
Annual expenses(Rs)	5000
Salvage value (Rs)	25000
Useful life years	10
MARR 12% per year	

Draw the sensitivity graph.

Q. 7 Write the short notes on any FOUR: 4×4=16

- [a] Job and Process costing
- [b] IRR and Pay back period
- [c] Break-even analysis.
- [d] Recaptured depreciation
- [e] Market research
- [f] Demand analysis.